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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,506	08/28/2003	Daniel T. Mudd	12252-0011	2200

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EXAMINER

KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/652,506	<b>Applicant(s)</b> MUDD ET AL.	
	<b>Examiner</b> Ramesh Krishnamurthy	<b>Art Unit</b> 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 - 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

This office action is responsive to amendment filed 02/03/2006.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/03/2006 has been entered.

(a) The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed exhaust vessel (Claim 1) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**Claims 1 – 19 are pending.**

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10, 14 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of these claims recites a limitation concerning a pressure drop between the restrictor inlet and restrictor outlet that is stated to be “at least about 50%” or “at least 50 %” . This limitation is unclear in that it does not set a reference pressure of which the claimed pressure drop is at least 50%. In this office action the reference pressure is taken to be the pressure at the inlet of the restrictor.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 – 12 and 14 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Loan et al. (US 5,868,159).

Loan et al. discloses a mass flow controller, comprising: a body portion having a first internal passage (12) and at least second internal passage (30,32) formed therein; a flow control valve (18) coupled to the body portion and in communication with the first and second internal passages; at least one pressure transducer (40,42) coupled to the body portion and in communication with at least one of the first internal passage and the second internal passage; a nonlinear flow restrictor (20) having an elongated path length configured to produce a high compressible laminar flow therethrough coupled to the second internal passage; a thermal sensor (38) in communication with at least one of the first internal passage, the second internal passage, and the flow restrictor; and an exhaust vessel (6) in communication with the flow restrictor. It is noted that the exhaust vessel (6) being a vacuum deposition chamber is inherently configured to be under a variety of pressures. Also the restrictor (20) is taken here to include all known restrictors including those made of sintered metal with a porous structure as well as those selected from the group consisting of capillary tubes, annular gaps, annular plates, parallel plates, grooved plates, stacked plates, coiled capillary bodies, and coiled sheets. Also since the pressures upstream and downstream of the restrictor could span a range of values, the device disclosed by Loan et al. is configured to deliver a flow such that the pressure drop across the restrictor is 50% of the pressure at the restrictor inlet i.e. a

highly compressible laminar flow. In fact, Figure 1 shows the restrictor to be clearly non-linear and also shows the pressure drop i.e.  $P_1 - P_2$  to be more than 50% of  $P_1$  for values of  $P_2$  that correspond to a range of mass flow rates from zero to the mass flow rate corresponding to ( $P_1 = 2P_2$ ). This range is also the range where the flow through the restrictive element is non-linear. It is further noted that the restriction device disclosed in Loan et al. is elongated in the sense that it has a length in the flow direction.

5. Claims 1 – 12 and 14 - 19 are rejected under 35 U.S.C. 102(a) as being anticipated by White et al. (WO/02/25391).

6. Claims 1 – 12 and 14 - 19 are rejected under 35 U.S.C. 102(e) as being anticipated by White et al. (US 6,539,968 B1).

7. The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

White et al. (WO 02/25391 or '968 patent) discloses a mass flow controller, comprising: a body portion having a first internal passage (42) and at least second internal passage (44) formed therein; a flow control valve (40) coupled to the body portion and in communication with the first and second internal passages; at least one pressure transducer (46,48) coupled to the body portion and in communication with at

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least one of the first internal passage and the second internal passage; a nonlinear flow restrictor (56) configured to produce a high compressible laminar flow therethrough coupled to the second internal passage; a thermal sensor (78) in communication with at least one of the first internal passage, the second internal passage, and the flow restrictor; and an exhaust vessel (36) in communication with the flow restrictor. It is noted that the exhaust vessel (36) being a vacuum deposition chamber is inherently configured to be under a variety of pressures. Also the restrictor (56) is taken here to include all known restrictors including those made of sintered metal with a porous structure as well as those selected from the group consisting of capillary tubes, annular gaps, annular plates, parallel plates, grooved plates, stacked plates, coiled capillary bodies, and coiled sheets. Also since the pressures upstream and downstream of the restrictor could span a range of values, the device disclosed in WO 02/25391 or in the '968 patent is configured to deliver a flow such that the pressure drop across the restrictor is 50% of the pressure at the restrictor inlet i.e. a highly compressible laminar flow. Figure 4 shows the restrictor to be clearly non-linear. It is further noted that the restriction device disclosed in either White et al. (WO/02/25391) or White et al. (US 6,539,968 B1) is elongated in the sense that it has a length in the flow direction.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 – 12 and 14 - 19 are rejected under 35 U.S.C. 102(b) as anticipated by Balazy et al. (US 6,152, 162) or, in the alternative, under 35 U.S.C. 103(a) as being unpatentable over Balazy et al. (US 6,152, 162) in view of Loan et al. (US 5,868,159).

Balazy et al. discloses a mass flow controller, comprising: a body portion having a first internal passage (26b) and at least second internal passage (26a) formed therein; a flow control valve (34) coupled to the body portion and in communication with the first and second internal passages; at least one pressure transducer (14,16) coupled to the body portion and in communication with at least one of the first internal passage and the second internal passage; a nonlinear flow restrictor (28) configured to produce a high compressible laminar flow therethrough coupled to the second internal passage; It is noted that the exhaust vessel (connected to outlet (24)) in a semi-conductor manufacturing facility (see col. 1) is a vacuum deposition chamber that is inherently configured to be under a variety of pressures. Also the restrictor (28) is taken here (see col. 10, lines 14 – 21) to include all known restrictors including those made of sintered

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metal with a porous structure as well as those selected from the group consisting of capillary tubes, annular gaps, annular plates, parallel plates, grooved plates, stacked plates, coiled capillary bodies, and coiled sheets. Also since the pressures upstream and downstream of the restrictor could span a range of values, the device disclosed by Balazy et al. is configured to deliver a flow such that the pressure drop across the restrictor is 50% of the pressure at the restrictor inlet i.e. a highly compressible laminar flow. Figure 2 shows the restrictor to be clearly non-linear. It is further noted that the restriction device disclosed in Balazy et al. is elongated in the sense that it has a length in the flow direction.

It is noted that a thermal sensor (considered inherent to the system of Balazy et al. and included in "the other process data" mentioned at Col. 9, lines 44 – 45) in communication with at least one of the first internal passage, the second internal passage, and the flow restrictor. However, should it be determined that Balazy et al. does not include a thermal sensor, it is considered to be obvious to one of ordinary skill in the art at the time the invention was made to provide a thermal sensor since as taught by Loan et al. such a sensor would allow the fluid to be maintained in a predetermined temperature or temperature range.

10. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Loan et al. or Balazy et al. or White et al. (WO/02/25391) or White et al. (US 6,539,968 B1) or the combination of Balazy et al. and Loan et al. (US 5,868,159), as set forth above and further in view of Catherton (US 3,680,376).

The disclosures of Loan et al. or Balazy et al. or White et al. (WO/02/25391) or White et al. (US 6,539,968 B1) or the combination of Balazy et al. and Loan et al. (US 5,868,159), as set forth above, discloses the claimed invention with the exception of explicitly disclosing the restrictor the ratio whose length (of the elongated path) to its internal diameter is large.

Catherton discloses a nozzle restrictor (Figs. 4, 5) having an elongated path ratio whose length (of the elongated path) to its internal diameter is large, for the purpose of enhancing the accuracy of measurement of the pressure difference by reducing the noise associated with the measurement.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in arrangements of Loan et al. or Balazy et al. or White et al. (WO/02/25391) or White et al. (US 6,539,968 B1) or the combination of Balazy et al. and Loan et al. (US 5,868,159), a restrictor whose length (of the elongated path) to its internal diameter is large, for the purpose of enhancing the accuracy of measurement, as recognized by Catherton.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

### ***Response to Arguments***

11. Applicant's arguments filed 02/03/2006 and 01/31/2006 have been fully considered but they are not persuasive.

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12. The declarations under 37 CFR 1.132 filed 01/31/2006 is insufficient to overcome the rejection of claims 1 - 19 based upon either White et al. (WO/02/25391) or White et al. (US 6,539,968 B1) as set forth in the last Office action because: neither of the affidavits show that any invention disclosed but not claimed in the reference - White et al. (WO/02/25391) or White et al. (US 6,539,968 B1), was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. The affidavits merely state that William W. White is an inventor in both the references cited. It is further noted that as MPEP § 2132.01 states "Others" Means Any Combination of Authors or Inventors Different Than the Inventive Entity

The term "others" in 35 U.S.C. 102(a) refers to any entity which is different from the inventive entity. The entity need only differ by one person to be "by others." This holds true for all types of references eligible as prior art under 35 U.S.C. 102(a) including publications as well as public knowledge and use. Any other interpretation of 35 U.S.C. 102(a) "would negate the one year [grace] period afforded under § 102(b)." *In re Katz*, 687 F.2d 450, 215 USPQ 14 (CCPA 1982).

It is further noted that as MPEP § 2136.04 states

**IF THERE IS ANY DIFFERENCE IN THE INVENTIVE ENTITY, THE  
REFERENCE IS “BY ANOTHER”**

“Another” means other than applicants, *In re Land*, 368 F.2d 866, 151 USPQ 621 (CCPA 1966), in other words, a different inventive entity. The inventive entity is different if not all inventors are the same. The fact that the application and reference have one or more inventors in common is immaterial. *Ex parte DesOrmeaux*, 25 USPQ2d 2040 (Bd. Pat. App. & Inter. 1992) (The examiner made a 35 U.S.C. 102(e) rejection based on an issued U.S. patent to three inventors. The rejected application was a continuation-in-part of the issued parent with an extra inventor. The Board found that the patent was “by another” and thus could be used in a 35 U.S.C. 102(e) /103 rejection of the application.).

**A DIFFERENT INVENTIVE ENTITY IS *PRIMA FACIE* EVIDENCE THAT  
THE REFERENCE IS “BY ANOTHER”**

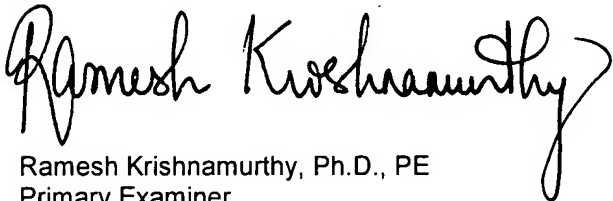
Applicant's argument is that Loan et al. fails to disclose both (a) a restrictor having a highly compressible laminar flow therethrough and (b) a restrictor that has an elongated path length. However, as set forth above, Loan et al. clearly discloses a restrictor having highly compressible laminar flow therethrough and as for elongated path length, it is the examiner's position that the restriction device disclosed in Loan et al. is elongated in the sense that it has a length in the flow direction. The arguments pertaining to Balazy et al. have been rendered moot by the new grounds of rejection set forth above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (571) 272 – 4914. The examiner can normally be reached on Monday - Friday from 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene L. Mancene, can be reached on (571) 272 – 4930. The fax phone number for the organization where this application or proceeding is assigned is (571) 273 – 8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "Ramesh Krishnamurthy". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Ramesh Krishnamurthy, Ph.D., PE  
Primary Examiner  
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